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Amendments to the Claims:

This listing of claims replaces all previous versions and listings of claims in this

application.

1-59. (Canceled)

60. (Currently Amended) A hypermutable, transgenic mouse wherein the germ

and somatic cells of said mouse express a transgene comprising a transgenie

polynucleotide encoding a dominant negative form of a human PMS2 mismatch repair

protein, wherein the protein comprises the firsts 133 amino acids of human PMS2, said

polynucleotide operably linked to a promoter, wherein said cells that express said

transgene are hypermutable.

61. (Currently Amended) A hypermutable, transgenic mouse produced by a

process comprising the steps of:

introducing a transgene comprising a transgenie polynucleotide encoding a

dominant negative form of a human PMS2 mismatch repair protein into a fertilized

mouse egg, wherein the protein comprises the first 133 amino acids of human PMS2, said

polynucleotide operably linked to a promoter whereby said protein is expressed and said

fertilized meuse egg becomes hypermutable;

implanting the fertilized egg into a pseudopregnant female; and

allowing said mouse egg to develop into a hypermutable, transgenic mouse

comprising cells that express the transgene, wherein said cells that express the transgene

are hypermutable.

62-70. (canceled)

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71. (Currently Amended) A method for generating a mutation in a gene of interest comprising the steps of:

introducing a <u>transgene comprising a</u> transgenie polynucleotide encoding a dominant negative form of a human PMS2 mismatch repair protein into a fertilized mouse egg, wherein the protein comprises the first 133 amino acids of human PMS2, <u>said polynucleotide operably linked to a promoter</u> whereby said protein is expressed and the fertilized mouse egg becomes hypermutable;

implanting the fertilized egg into a pseudopregnant female;

allowing said fertilized mouse egg to develop into a hypermutable, transgenic mouse comprising cells that express the transgene, wherein said cells that express the transgene are hypermutable; and

testing the mouse to determine whether the gene of interest harbors a mutation.

- 72. (Previously Presented) The method of claim 71 wherein the step of testing comprises analyzing a nucleotide sequence of the gene of interest.
- 73. (Previously Presented) The method of claim 71 wherein the step of testing comprises analyzing mRNA transcribed from the gene of interest.
- 74. (Previously Presented) The method of claim 71 wherein the step of testing comprises analyzing a protein encoded by the gene of interest.
- 75. (Currently Amended) The method of claim 71 wherein the step of testing comprises analyzing the phenotype conferred by ef the gene of interest.

76-85. (Canceled).

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- 86. (Currently Amended) The hypermutable, transgenic mouse of claim 61 wherein the transgenie polynucleotide comprises a truncation mutation at codon 134 of SEQ ID NO:1.
- 87. (Previously Presented) The hypermutable, transgenic mouse of claim 86 wherein the truncation mutation is a thymidine at nucleotide 424 of wild-type *PMS2* of SEQ ID NO:1.
 - 88. (Canceled)
- 89. (Currently Amended) The mouse of claim 88 wherein said transgenie polynucleotide comprises a truncation mutation at codon 134 of SEQ ID NO:1.
- 90. (Previously Presented) The mouse of claim 89 wherein the truncation mutation is a thymidine at nucleotide 424 of wild-type *PMS2* of SEQ ID NO:1.
 - 91. (Canceled)
- 92. (Currently Amended) The method of claim 71 wherein said transgenie polynucleotide comprises a truncation mutation at codon 134 of SEQ ID NO:1.
- 93. (Previously Presented) The method of claim 92 wherein the truncation mutation is a thymidine at nucleotide 424 of wild-type *PMS2* of SEQ ID NO:1.

94-96. (Canceled)